

233-7.

THATCHER

Furnaces



THE
THATCHER
COMPANY
Furnaces





Newark Plant



Garwood Plant

Hatchler Plants at Newark and Garwood, N. J., cover eighteen acres of floor space. Our own fleet of auto trucks and many railroad trunk lines, easily accessible to both plants, insure efficient service in all times in shipments and deliveries.

TO THE TRADE

THE Thatcher Furnaces and Heaters shown in this Catalog represent the highest development in the heating industry. Produced under the supervision of expert heating engineers, utilizing the latest efficiency devices and the accumulated experience of over three quarters of a century.

From the time J. M. Thatcher began his experiments and secured his first patents on the now celebrated Thatcher "Tubular" Furnace—Thatcher Heaters have provided the utmost in service, met every test, won the highest approval of users and built business for dealers.

Every detail in the manufacture of Thatcher Heaters, from the designing and casting to the finishing and testing, is rigidly inspected in order to maintain the high standards set for Thatcher Products. The constantly increasing demand for Thatcher Heaters has necessitated continual expansion and the growth of The Thatcher Company since 1850 has been noteworthy.

Realizing that it is not only necessary to make good heaters but that a sound selling policy is vital to success, we have concentrated our selling activities on the *point of sale*, that is, the DEALER. Our policy of absolute protection and co-operation has had far reaching results, securing the good will and friendship of the Trade.



We trust that the information given in this book may prove helpful and that we may have the privilege of serving you often.

THE THATCHER COMPANY.

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THATCHER TUBULAR FURNACE

Number	Diam. of Casing	Height of Casting	Diam. of Casting	Diam. of Smoke Collar	Size of Cold Air Box	Heat Pipe Capacity Sq. In.	Heat Capacity Per 1000 Cu. Ft.
38	38	52	32	7	12 x 28	336	12 to 17
42	42	53	37	7	12 x 34	410	17 to 23
46	46	55	39	8	12 x 40	500	23 to 30
50	50	58	42	8	14 x 44	600	30 to 38
54	54	59	45	8	14 x 48	700	38 to 48
58	58	62	48	9	14 x 56	800	48 to 62
62	62	64	53	9	16 x 60	1100	62 to 80

THE THATCHER COMPANY



12 Good Reasons Why the Celebrated "Thatcher Tubular" is Known as "The Most Efficient Warm Air Furnace Made"

1. One piece cast iron radiator, no possible escape of gas.
2. Solid cast iron tubes conduct the fresh air to upper air chamber.
3. Deep cup joints are absolutely gas tight.
4. Patented "Porcupine" Fire-Pot with straight sides. Projecting pegs double the radiating surface and thoroughly heat all fresh air.
5. Pegs conduct heat from inside surface insuring even expansion and therefore prolong life of fire pot.
6. High ash pit prevents burning out of grate.
7. High cast iron front—insuring tight fitting casing joints.
8. All self-cleaning surfaces in radiator and combustion chamber.
9. Tubes cause rapid circulation—air warmed quickly—not burned.
10. Extra large feed door permitting easy firing.
11. Large slicer door provides easy access to grate.
12. Patented Anti-Clinker Grate on ball bearings brings ashes to front for easy cleaning.

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Special Features of the Celebrated Thatcher Tubular Furnace



Gastight Radiator

Rests on combustion chamber and cast in one piece, absolutely gastight, cup joints preventing escape of gas from combustion chamber. Legs of the radiator may be placed into cup joints of combustion chambers so that smoke pipe will lead in any direction required by CHIMNEY connection.

"Tubular" Combustion Chamber

Rests on fire-pot and allows ample space for complete combustion of the hot gases. The tubes conduct fresh air through heated chamber so rapidly that while it is warmed quickly it is not "burnt" or scorched. This tubular construction means economy of fuel.



"Porcupine" Fire-Pot

Rests on "anti-clinker" patented grate. Being circular, with straight sides, a live and efficient fire is insured throughout. Projecting pins, cast as one piece with fire-pot, provide additional radiating surface of more than double the amount of ordinary fire-pot. They also prolong life of fire-pot itself by radiating heat away from parts which come in direct contact with fire.



Ball-Bearing Revolving "Anti-Clinker" Grate

Rests in the base and being ball-bearing, is easily operated. Moving in a circular manner, the fire is cleaned on all sides, which insures quick combustion, devoid of the deadening effect of accumulated ashes.

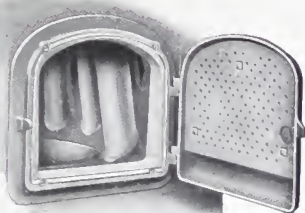


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Special Features of the Celebrated Thatcher Tubular Furnace

Feed Door

Is particularly large and well proportioned. Grooved joints prevent any possibility of gas leakage. Fitted with nickel plated "cold handle" which does not transmit heat, the feed door is easy to open and close.



Air Moistener

To supply the moisture that is essential in "healthful heat," every Thatcher Furnace is fitted with a large vapor pan having a broad evaporating surface. A convenient cover permits easy filling.



Deep Cup Joints

Tight fitting connections are assured between all castings by the deep cup joints which allow for expansion and contraction of the metal under extremes of temperature. A uniform, smooth surface, inside, prevents the accumulation of ashes.



Draft Regulator

Eliminates the necessity of going down to the furnace. Draft dampers are easily regulated from the room above by this patented Thatcher attachment. Handsomely finished in oxidized copper.

THE THATCHER COMPANY



METEOR FURNACE
with Steel Radiator

Number	Diameter of Casing	Diameter of Firepot	Height of Castings	Diameter of Steel Radiator	Diameter of Smoke Pipe		Heat Capacity per 1000 Cu. Ft.	Heat Pipe Capacity Sq. In.
					Steel Rad.	C. I. Rad.		
32-16	32	16	4 $\frac{3}{4}$	25	7	7	6-9	220
36-18	36	18	50	26 $\frac{1}{2}$	7	7	9-11	240
40-20	40	20	50 $\frac{1}{2}$	27 $\frac{3}{4}$	8	8	11-13	280
44-22	44	22	51 $\frac{1}{2}$	31 $\frac{3}{4}$	8	8	13-17	400
48-24	48	24	53 $\frac{3}{4}$	35 $\frac{3}{4}$	8	9	17-23	503
52-26	52	26	54 $\frac{5}{8}$	39 $\frac{1}{2}$	8	9	23-28	590
*158	58	30	62 $\frac{1}{2}$	49	10	10	33-38	866
*165	65	34	62 $\frac{1}{2}$	53	10	10	38-43	1040

*All Meteor Furnaces made with either Steel Radiator or One-piece Cast Iron Radiator except these two largest sizes which are Furnished with Steel Radiator only.

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SKELETON VIEW OF METEOR FURNACE WITH ONE-PIECE CAST IRON RADIATOR

THIS furnace embodies all modern improvements and is backed by the Thatcher guarantee. The ease with which it may be installed appeals particularly to the dealer, and its simplicity of operation combined with its fuel saving features please the owner.

Having an air-tight, dust-proof construction, the Meteor prevents dirt, smoke or soot soiling the wall paper, curtains, or furniture. Either soft or hard coal may be burned and if desired, the furnace may be fitted with a wood grate (see page 11).

THE THATCHER COMPANY

Special Features of the Meteor Furnace



One-Piece Cast Iron Radiator

This type is recommended where soft coal is used. The absence of joints insures freedom from gas leakage which may occur when two piece bolted cast iron radiators are used.

Large Combustion Chamber

Allows ample space for the perfect combustion of coal gases and permits an especially large convenient feed door.



Corrugated Fire Pot

The fire pot may be furnished in either one section or two sections. The heavy corrugations not only add strength but additional heating surface. The deep cup joints are gas tight even under the constant strain of expansion and contraction.

Anti-Clinker Triangular Grates and One-Piece Ash Pit

Four to six grate bars—depending on the size of the furnace—operate in pairs and even the slight revolving of these bars frees the fire of dead ashes or clinkers with no waste of fuel. The ash pit, cast in one piece, overcomes any danger of leakage of dust into the air chamber—a common cause of complaint with furnaces having bolted ash pit sides.

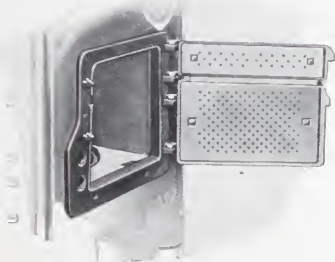


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Special Features of the Meteor Furnace

The Steel Radiator

Is recommended where hard coal is the principal fuel. The long fire travel reduces fuel consumption by utilizing all available heat units. The Meteor Furnace is furnished with either the steel or the one-piece cast iron radiator shown on opposite page.

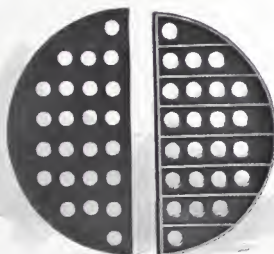


Feed Door

Is unusually large and made in two sections. Either one or both doors may be opened at the same time. The size makes firing easy and gives ready access to all points of the furnace.

Wood Grate

For use in burning heavy pieces of wood. May be readily inserted through the feed door and set on top of the regular coal grates. Allows the necessary draft, through grates, for the most efficient combustion.



TOP VIEW REVERSE



Draft Regulator

Eliminates the necessity of going down to the furnace. Draft dampers are easily regulated from the room above by this patented Thatcher attachment. Handsomely finished in oxidized copper.

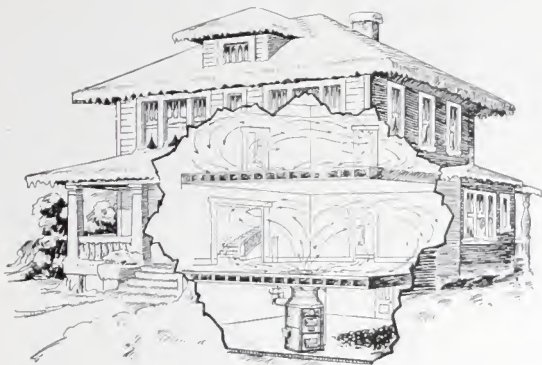
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THATCHER PIPELESS FURNACE
Dimensions and Capacities

Number	Diameter Firepot	Diameter Outer Casing	Approximate Htg. Cap. in Cubic Feet	Diameter of Smoke Pipe	
				Steel Radiator	Cast Iron Radiator
36-16	16	36	5 to 8,000	7	7
40-18	18	40	8 to 12,000	7	7
44-20	20	44	12 to 15,000	8	8
48-22	22	48	15 to 20,000	8	8
52-24	24	52	20 to 26,000	8	9
56-26	26	56	26 to 35,000	8	9

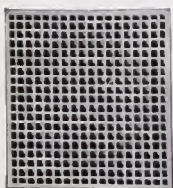
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THATCHER PIPELESS FURNACE

FOR consistent Economy, Health, Comfort, Cleanliness, and Convenience the Thatcher Pipeless Furnace is the LEADER in the heater line. It is economical of space, cost of installation and fuel—saves from 30% to 40% of the average coal bill. The Thatcher Pipeless Furnace is founded on the scientific principle of air circulation. The warm air expands and rises through the center of the register—into the rooms—and, as it cools, is drawn down through the cold air channel, into the furnace, where it is reheated, purified and moistened by the vapor from the water pan and then recirculated through the warm air register. This insures a constant flow of evenly heated "washed" air in every room of the house—upstairs and down and provides ideal ventilation.

Equipment furnished with heater—complete inner and outer galvanized casings. Extension pipes for eight-foot cellar and register with either oxidized copper or black japanned finish. Special THATCHER water pan and two outside casing clean-out doors. Extension pipes for cellars exceeding eight feet furnished when ordered, at a slight additional cost.



Special Register



Anti-Clinker Grates, One-Piece
Ash Pit and Bottom

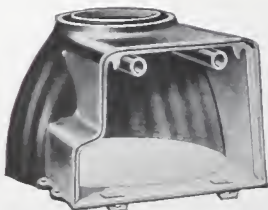
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THATCHER METEOR FURNACE

With "Hot Blast" Attachment for Burning Soft Coal

The "Thatcher Meteor" furnace with hot blast attachment is guaranteed to burn any grade of soft coal, such as slack, screening, or lignite from the fact that the admission of air into and above the fuel at the point of combustion cokes this fuel and in a short time after the fire is replenished, a clean fire like that of hard coal or coke can be had. The construction is such that it is exceedingly economical in the point of fuel consumption as all the particles of coal are thoroughly consumed.



Mouthpiece Showing Hot Blast

And this furnace embodies all of the good structural features of the Meteor furnace. For dimensions and capacities see page 8.

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THATCHER SMOKELESS FURNACE

Without Casing

THE notable success of this Furnace which burns soft coal efficiently and smokelessly, utilizing the smoke and soot as fuel, has established new standards of heating economy.

In smoke and gases which ordinarily go up the chimney, there is as much as 32% combustible material unused because of the lack of free oxygen. The Thatcher Smokeless supplies this oxygen by admitting heated air through an air blast projecting through the feed door. Operating on the principle of the Bunsen Burner, the clear hot, smokeless flames gives the greatest amount of heat from a given amount of fuel.

Number	Diameter Fire-pot	Diameter Casing	Size Smoke Pipe	Height Castings	Size Feed Door	Heat Pipe Capacity in Square Inches
44-20	20	44	8	51	13 x 14	310
48-22	22	48	8	52	13 x 14	425
52-24	24	52	9	52½	14 x 15	550
56-26	26	56	9	53½	14 x 15	625

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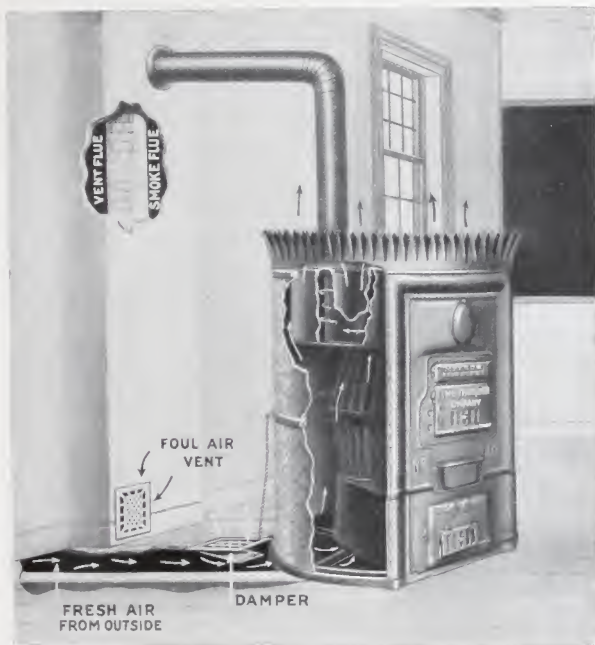


METEOR SCHOOLROOM HEATERS

Style C

FOR heating single rooms, such as schoolrooms, churches, store-rooms, workshops, etc., where there is no basement and it is necessary to set the Heater on the floor of the room to be heated. For the proper circulation of air therein, the Heater is set on legs, to provide a space under the base to draw the cold air off the floor, pass it up through the Heater and discharge it from the top.

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METEOR SCHOOLROOM HEATER

Style A

IN style A the fresh air is drawn in from the outside under the floor as shown in illustration above. The fresh air duct is fitted with an adjustable register to regulate the flow of air and a cast iron water pan is set in the casing to furnish moisture.

Capacities given below are approximate and apply for either style "A" or style "C". In determining the size of the heater required, the amount of glass surface in the building, and the conditions to which the building is exposed should be considered.

Number	Diameter of Fire Pot	Diameter of Smoke Pipe	Diameter of Casing	Heat Capacity Per 1000 Cubic Feet
36	20	7	40	6-9
40	22	7	44	9-12
44	24	8	48	12-15
48	26	8	52	15-20

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THATCHER GEYSER HOT WATER SUPPLY HEATERS

FOR Apartment buildings, garages or residences, and in many places of business where the need of a reliable supply of hot water always available is of the utmost importance.

From the moment the water begins to absorb the heat it rises freely and rapidly through the firepot into the dome and finally into the storage tank and hot water supply pipes. The Round Dome type has an exceptionally deep fire pot, allowing a sufficient charge of fuel to last from twelve to fifteen hours without attention. In cases where it is only desired for domestic water heating, this type is preferable, and furnishes sufficient hot water for all purposes. "Geyser" Hot Water Supply Heaters are adapted for all kinds of fuel, hard or soft coal, coke, wood or gas.

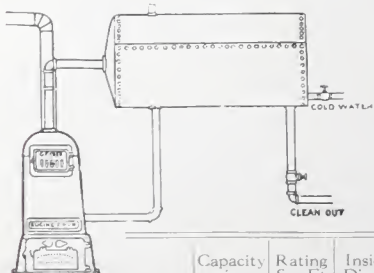


Diagram of Typical Installation

Number	Capacity in Gallons per Hour	Rating Sq. Ft. Radiation	Inside Diameter of Fire Pot	Total Height	Height to Center of Return	Flows and Returns Tapped	Size of Smoke Pipe
1	150	120	10	31 1/2	9	2 1/2	6
2	300	240	12	38 1/4	12 1/4	2 1/2	6
4	400	320	14	40 1/4	12 1/4	2-2 1/2	7
7	550	440	17	42	15	2-2 1/2	8

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No. 100 Geyser Hot Water Supply Heater

The flat top of these heaters have one eight inch cover and are large enough for a small boiler. There is a five inch tier of fire brick below the water section which gives an unusual depth of fire and great power to this heater. Made in three sizes, Nos. 100, 200 and 300 for varying capacities as shown.



No. 28 "Active" Laundry Iron Heater

Accommodates 9 irons around sides. Has large flat top to heat standard wash boiler. Two 8-inch covers and one removable centerpiece. May be fitted with coil to furnish hot water. Capacity 30 to 40 gals. per hour.



No. 10 "Geyser" Hot Water Supply Boiler

Removable covers and centerpiece. Water circulates freely before leaving heater. Single charge of coal lasts from 8 to 10 hours. Capacity of 75 gallons per hour.

Number	Capacity in Gals. Per Hour	Inside Diameter Fire-Pot	Depth of Fire-box	Width of Top	Height to Top	Height to Center of Return	Flows and Returns Tapped	Size of Oval Smoke
100	40-50	8	12	15	25	20	1	4 1/2
200	60-75	10	13 1/2	17	26 1/2	20 3/4	1	5
300	120	12	15 1/2	17	28	17 1/2	2-1	5
28	...	12	6	23	24	15 3/4	...	4 1/2
28-C	30-40	12	6	23	24	18 1/2	1	4 1/2
10	60	10	8	6x24	23 1/2	13 1/2	1	6

Any of the above heaters may be furnished with a galvanized water section at slight additional charge.

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THE "THATCHER DISC" HEATERS

A CONVENIENT attachment that may be used on all "Thatcher" Furnaces to supply hot water for domestic purposes, or to furnish additional heat through a circulation of hot water connected to radiators. Capacities from 40 to 160 gallons of hot water per hour, or from 30 to 140 square feet of radiation. An even greater amount of heating power may be obtained by placing one disc over the other.

The disc is suspended, as illustrated, where the heat is most intense and does not detract from the heating efficiency of the fire.

Two or more of these heaters can be placed one over the other—to provide additional capacity.

In many residences there may be one or two rooms so situated that they cannot successfully be heated by the warm air furnace. In such instances it is often desirable to place a radiator in the room connected to a combination water heater as shown in the cut. This method of combination heating has proven a success in thousands of homes.

Number	Diameter	Gallons of Water Heated per Hour	Capacity Sq. Ft. of Radiation	Flows and Returns Tapped Inches
7	7	40	30	1
9	9	60	45	1
12	12	100	75	1 1/2
16	16	125	100	2
20	20	160	140	2 1/2

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GENERAL INFORMATION FOR FURNACE INSTALLATION

Location of Heater

In determining the location, try to arrange so all warm air pipes will have, as nearly as possible, the same length. Pipes supplying living rooms, dining rooms and main halls should, of course, have first consideration. Remember that the length of warm air pipes is always more important than length of smoke pipe.

Registers

Should not be placed in or next to outside walls. Free areas of registers for warm air should be as much or more than the sectional area of basement pipes with which they are used.

Registers should fit accurately into baseboard or wall boxes to prevent leakage.

Borders or double boxes with intervening spaces not less than $\frac{5}{16}$ inch should be used for registers in floors. Faces of registers should be flush with level of floors.

Warm Air Pipes

Must be at least 8 inches for small bed rooms or baths and up to 12 inches in size for larger rooms and should be fitted with dampers not more than 24 inches from casings.

Give pipes as much elevation as possible—at least 1 inch to every 10 feet of length.

Pipes and fittings in basement, 12 inches or less in size, should be made of I.C. or heavier bright tin.

Join sections by double seams or $1\frac{1}{4}$ inch lapped joints which should be beaded and soldered or riveted.

Cold Air Passages

The importance of having free and ample circulation of the air through the heater cannot be over-estimated. The cold air box should be made of galvanized iron or of smoothly jointed and finished wood with metal linings and wherever possible should be taken from the most exposed side of the house, usually from the North or Northwest. The cold air box taken from the outside should have a capacity of 80% of the total area of the cellar pipes. If the cold air is taken from the first floor of the house, the opening to the heater should be equal to the *full capacity of all the warm air pipes*. Air supply should not be taken from the cellar.

The cold air inlet should be directly at the rear of the heater to insure the best results and the top of this opening must never be higher than the top of the ash pit. If the cold air is supplied to a pit under the furnace, the pit should not be over 16 inches deep.

All cold air boxes to bring supply from outside should have a damper near the outer opening.

Chimney Flues

Should be of ample size and straight from the cellar floor to above the highest projection of the roof. They should be absolutely independent of each other and of sufficient area of proper combustion of fuel. A well-jointed tile flue, perfectly round, is better than a brick flue of equal area. A square brick flue is preferable to a rectangular one, on account of the greater friction in the latter.

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PLAN YOUR HEATING JOBS TO COMPLY WITH THE STANDARD CODE

THIS Code is approved and issued by authority of the National Warm Air Heating & Ventilating Association, The American Society of Heating & Ventilating Engineers, National Association of Sheet Metal Contractors, Western Warm Air Furnace & Supply Association, and The Midland Club. Complete copies of this code may be obtained from any of these Associations or from us.

Correct sizes of basement warm air pipes may be determined as follows:

Divide square feet of glass by 12
Divide square feet of net outside wall by 60
Divide cubic contents by 800
Add together the above.

For first floor rooms, multiply by 9. The result is the area of the basement pipe. For example:

The sum of:	} $\times 9 =$ Area of Basement Pipe.
Glass (sq. ft. $\div 12$)	
Net wall (sq. ft.) $\div 60$	
Cubic Contents $\div 800$	

For second floor rooms multiply by 6. For third floor rooms multiply by 5.

Determine the size of wall stacks as follows:

For second and third floor rooms deduct 30% from the basement pipe area determined as above.

Use no warm air pipe less than 8 inches in diameter. If a basement warm air pipe figures greater area than any standard commercial size, then the next larger size should be used.

The above formulæ are for 70 degrees inside temperature with zero temperature outside. For a temperature of 10 degrees below zero, add 10 per cent to the capacity of each pipe.

All registers must have a free area at least equal to the calculated area of the basement pipe.

To determine the correct size of furnace, add together the actual warm air pipe areas in square inches as obtained above and select a furnace having a free area not less than the sum of all warm air pipe areas.

Registers for warm air and warm air pipes should not be located in outside walls. The warm air registers in the various rooms should be located in or near the inside walls in all cases.

The air supply to furnace for warm airheating plants may be taken from outside or from within the building or may be taken partially from outside and partially from within. In no case, however, shall air be supplied to any furnace from any basement or furnace room.

Note: This is not the complete code. If you have not the complete code conveniently at hand for reference, and have not studied it, we will be more than pleased to send you a copy of the last edition with our compliments.

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The sizes of air ducts are shown in table C. Inside, return, cold air ducts should be 20% greater in square inch capacity than the combined area or capacity of all warm air pipes.

If outside cold air is used, the cold air ducts should have the same square inch area as the total area of all warm air pipes combined.

Be sure to run all warm air pipes with as few elbows as possible and have an elevation of not less than one inch per foot from furnace to register or pipe.

No warm air pipe should be more than 15 feet long.

TABLE C
SIZE OF DUCTS FOR COLD
OR RETURN AIR

Area		Area	
100	10x10	560	20x28
120	10x12	608	16x38
140	10x14	600	20x30
144	12x12	640	16x40
168	12x14	648	18x36
192	12x16	672	16x42
196	14x14	680	20x34
200	10x20	684	18x38
216	12x18	704	16x44
224	14x16	720	18x40
240	12x20	720	20x36
252	14x18	736	16x46
264	12x22	756	18x42
280	14x20	760	20x38
288	12x24	768	16x48
256	16x16	800	16x50
160	10x16	800	20x40
320	16x20	840	
336	14x24	880	
360	12x30	880	
384	16x24	920	
420	14x30	924	
432	12x36	990	
432	18x24	1000	
480	20x24	1056	
480	16x30	1080	
504	14x36	1100	
504	18x28	1152	
512	16x32	1200	
540	18x30	1296	
544	16x34	1344	
576	16x36	1400	

TABLE OF CAPACITY OF PIPES AND REGISTERS

ROUND PIPES				REGISTERS			
Diam. of Pipe	Area in Square Inches	Diam. of Pipe	Area in Square Inches	Size of Opening	Capacity in Square Inches	Size of Opening	Capacity in Square Inches
8	50	20	314	8x10	53	20x20	267
9	63	22	380	8x12	64	20x24	320
10	78	24	452	9x12	72	20x26	347
11	95	26	531	9x14	80	21x29	406
12	113	28	616	10x12	84	24x27	432
14	154	30	707	10x14	93	27x27	480
16	201	32	804	12x15	120	24x30	486
18	254	36	975	12x19	152	24x32	512
				14x18	178	30x30	600
				14x22	205	30x36	720
				16x24	256	36x36	864

We would recommend our customers to consult the above table carefully when considering the size of Pipes and Registers to use for furnace connections.

Always choose a register with a little more capacity than the connecting warm air pipe, i.e., a 12-inch pipe has an estimated capacity of 113 square inches, for which we would recommend a 12 x 15 Register, having an estimated capacity of 120 square inches.

To obtain the net capacity of a register, deduct one-third from the total area in square inches of the register opening.

THATCHER PRODUCTS

Boilers—"Thatcher" Round Boilers.

"Thatcher" Sectional Boilers.

Ranges—"Thatcher Twin-Fire" Combination Coal and Gas Ranges, with porcelain enamel finish and other types of coal and gas Ranges.

Garage Heaters—"Thatcher" Garage Heaters.

Hot Water Supply Boilers—"Geyser" Hot Water Supply Boilers.

Furnaces—"Thatcher" Celebrated Tubular Furnaces.

"Meteor" Furnaces.

"Thatcher" Pipeless Furnaces.

"Meteor" School Room Heaters.

Smokeless Furnaces.

Ship Ranges—"Thatcher" Mascot Ship Ranges.

*Illustrated literature on any "Thatcher" Products
will be gladly sent on request*

"Made in Newark—Sold Everywhere"

THE THATCHER COMPANY

General Offices:

New York
21 W. 44th St.

39-41 St. Francis Street
NEWARK, N. J.

Chicago
341 N. Clark St.



THATCHER
Products